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Country Report

Occupational Safety and Health in The United Kingdom: Securing Future Workplace Health and Wellbeing

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Abstract: The industrial revolution that took place in the United Kingdom (UK) between 1760 and 1830 lead to profound social change, with rapid urbanisation associated with squalid living conditions and epidemics of infectious diseases. The next 150 yr or so saw the introduction of many specific acts of health and safety legislation. In 1974 new overarching primary legislation was introduced that would produce a step change in the evolution of health and safety enforcement. In 2004, a new strategy was launched designed to promote a vision embedding health and safety as a cornerstone of a civilised society and to achieve a record of workplace health and safety that leads the world. Good progress in controlling many safety hazards and improving occupational hygiene has been made. There has been a fall in numbers of a wide range of injuries and diseases or illnesses since 2000. The challenge will be to maintain these favourable trends and prepare for new and emerging diseases at a time when resources are diminishing. The importance of occupational health within the UK health and safety strategy has been recognised over the last decade. Occupational health is developing a new paradigm which combines classical health risk management with assessment of workability, rehabilitation back to work and promotion of health and wellbeing. There is an increasing recognition that being in supported employment is good for health and reduces health inequalities.

Key words: Health and safety, Injuries, Diseases, Occupational health, Health and wellbeing, Research, Information, Standards, Enforcement

Evolutionof a Health and Safety System

Consideration of the health and wellbeing of workers reflects prevailing social attitudes and tends to lag behind periods of significant industrial change. Donald Hunter records that the miner of antiquity was almost always a slave[1)]. He also makes reference to the treatise of Xenophon who stated "What are called the mechanical arts, carry a social stigma and are rightly dishonoured in our cities". The industrial revolution that took place in the United Kingdom (UK) between 1760 and 1830 lead to profound social change, with rapid urbanisation associated with squalid living conditions and epidemics of infectious diseases. Working and residential conditions in the 1830s and their effects on adults and children were recorded by Charles Turner Thakrah, regarded as the father of occupational medicine in the UK[2)]. However, it is salutary to learn that "*Most persons, who reflect on the subject, will be inclined to admit that our employments are in a considerable degree injurious to health, but they believe, or profess to believe, that the evils cannot be counteracted, and urge that an investigation of such evils can produce only pain and discontent*." Increasing pubic intolerance of such

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conditions lead to the involvement of government and the first of many Factories Acts: The Health and Morals of Apprentices Act, 1802. This Act established a local system of voluntary factory inspection by which *visitors* had the right to "direct the adoption of such sanitary regulations as they might think proper". However, in 1833, a Factory Inspectorate was established, whereby inspectors were given right of entry into factories, power of prosecution of recalcitrant owners and the responsibility of setting up and inspecting factory schools[1)].

Having established the principle of government regulation and enforcement of standards for working conditions, the next 150 yr or so saw the introduction of many more specific acts of health and safety legislation. In 1974 new overarching primary legislation was introduced that would produce a step change in the evolution of health and safety enforcement. The Health and Safety at Work etc Act[3)] defines the fundamental structure and authority for regulation and enforcement and defines general duties on all employers, employees, contractors and others who own and manage workplaces. It established a system of public supervision of workplaces via the creation of a Health and Safety Commission and a Health and Safety Executive (HSE), the latter being responsible for enforcement underpinned by criminal sanctions, including fines and imprisonment. The Commission's duties were to

- assist and encourage persons concerned with matters relevant to the operation of the objectives of the Act;
- make arrangements for and encourage research and publication, training and information in connection with its work;
- make arrangements for securing that government departments, employers, employees, their respective representative organisations, and other persons are provided with an information and advisory service and are kept informed of, and adequately advised on, such matters;
- propose regulations.

In 2008, the duties of the Commission were subsumed by the HSE.

The UK joined the European Economic Community (EEC) in 1973 and became subject to European legislation. The role of the European Union in framing a health and safety culture in Europe has been described[4)]. European Directives are incorporated into UK legislation by way of health and safety regulations. The 1990s saw a range of new regulations introduced complementing the Health and Safety at Work Act and extending the detail of the standards set. The so-called 'six pack' of regulations implementing EC directives took effect in January 1993. They included rules covering new areas such as manual handling and VDU (Visual Display Unit) work, as well as the Management of Health and Safety at Work Regulations (MHSW), which encapsulated the Commission's long held commitment to a risk-based approach to improving health and safety.

In 2000 a Revitalising Health and Safety strategy was launched. It was designed to improve health and safety in all workplaces. It contained three elements: targets for Great Britain, a ten-point strategy and forty-four action points[5)]. The targets, to be achieved by 2010, were:

- 20% reduction in rate of work-related ill health
- 10% reduction in rate of fatalities and major injuries
- 30% reduction in rate of working days lost

In 2004, a new strategy was launched, thirty years after the advent of the Health and Safety at Work Act. A strategy for workplace health and safety in Great Britain to 2010 and beyond[6)] is designed to promote a vision to see health and safety as a cornerstone of a civilised society and to achieve a record of workplace health and safety that leads the world. The strategy recognises that resources are finite and limited and that recognising and engaging all the stakeholders involved in health and safety is essential for achieving the desired results. It also reflects the changing world of work, whereby, since 1974, there are many fewer large companies and many more small ones. Over 90% companies employ fewer than 10 employees. Manufacturing industry has declined whereas the service sector has become prominent. Part-time working is more common and there has been feminisation of many workforces. The challenges for health and safety are considered to be mainly health, although the rate of improvement in safety has slowed. A particular feature of the strategy is the challenge of occupational health. There will be a requirement for a strategic, partnership-based approach bringing together the public and private sectors to achieve access to occupational health expertise and a continuing emphasis on prevention of ill health supported by planned proactive safety inspections addressing underlying causes of ill health.

Research

The remit of the Health and Safety Commission includes conducting research and providing information and advice. Similarly, the HSE is responsible for providing authoritative information on technical matters based on wide ranging research programmes. In 1977/78 £8.6 million was spent on research. By 2004 this had risen to £34 million annually, including both internal projects and

contracted research. The current integrated science and research aims to address both generic and specific occupational health and safety issues and is supported by HSE's own Health and Safety Laboratory (HSL). With regard to creating safer and healthier workplaces, reducing the burden of occupational diseases is a key priority. In particular, there is a concentration on

- Long latency diseases
- Common health problems, such as musculoskeletal disorders
- Noise and vibration

Key industries and sector groups considered to be at highest risk and, therefore, the focus for targeted interventions are construction workers, foundry workers, engineering and welding, quarry workers, stone masons and building and maintenance activities where there is a high risk of exposure to asbestos[7]. For musculoskeletal disorders the priority is to develop and validate tools to support interventions. This includes the validation and updating of the Manual Handling Assessment Charts, the investigation of occupations and tasks requiring fixed postures and use of hand-held devices to identify numbers of workers involved, the nature of the risks and the measures needed for the prevention of ill health. With regard to noise and vibration, the focus is on health surveillance for noise-induced hearing loss and the dose response relationship between hand-arm vibration and the prevalence of upper limb disorders.

Information Gathering

Knowledge about injuries and ill health of workers comes from a variety of sources (Fig. 1). There is a legal requirement to report types of injury, specified diseases and dangerous occurrences. This is done by employers. This data, which tends to underestimate the true state of ill health, is complemented by self reports gathered in the Labour Force survey, which contains two additional survey modules: the Workplace Injury survey and the Self-reported Work-related illness (SWI) survey. The use of the SWI dates from 2003/4 and provides an indication of the annual prevalence and incidence of work-related illness. Voluntary reporting of occupational diseases by general practitioners (THOR GP) is a surveillance scheme dating from 2005. Currently around 270 GPs report new cases of work-related diseases anonymously to the University of Manchester. A similar scheme involves reporting by occupational physicians (THOR). The industrial injuries benefit scheme provides information about diseases eligible for compensation, such as mesothelioma. Mesothelioma and asbestosis death statistics are derived from two registers: The mesothelioma register and the asbestosis register. Entries to the registries are made if the words mesothelioma or asbestosis appear on death certificates. Hazards such as lead, ionising radiations and asbestos have specific legislation requiring medical surveillance of workers exposed to them. Doctors performing medical examinations must submit returns to the HSE annually.

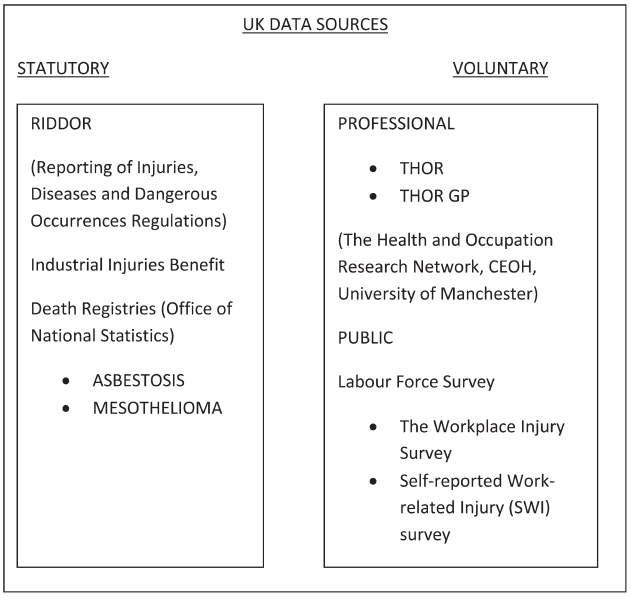

Fig. 1. UK Sources of Information

Occupational Injuries and Diseases

The key statistics for injuries and illnesses in 2010/11 include 1.2 million workers who suffered from a work-related illness, and 171 workers who were killed in fatal accidents; there were 200,000 reportable accidents causing greater than 3 d absence from work and 26.4 million working days were lost due to work-related illness and workplace injury[8]. The most frequent causes of injury are manual handling, slips and trips and falls from heights. The highest rates are found in manual occupations, particularly agriculture, construction and transport, and are higher in men than in women[9]. Between 1974 and 2011 fatal injuries to employees have fallen by 82% and reported non-fatal injuries have fallen by 76% (Table 1). Research commissioned by HSE suggests that about half the reduction of non-fatal injuries may be attributed to changes in patterns of employment and mixes of occupations.

Table 1. Comparison of injury rates in the period 1974 − 2011

Workplace injury (2010/11 data adjusted to align with 1974 reporting requirements)	1974	2010/11
Fatal injuries to employees	651	116
Rate of fatal injury per 100,000 employees	2.9	0.5
Reported non-fatal injuries to employees	336,701	80,479

Source HSE (http://www.hse.gov.uk/statistics/history/index.htm).

The "shattered lives" campaign aims to raise awareness of the harm that slips and trips at work can cause. More than 10,000 employees suffered a major injury as a result of a slip or a trip at work in 2008. An e-learning tool − STEP (Slips and Trips E-learning Package) − has been developed to help employers and workers manage hazards in the workplace[10]. In addition, WAIT − Work at height Access equipment Information Toolkit − has been developed to address falls from heights, which caused major injuries to more than 4,000 workers in 2008. A wide range of resources has been made available by HSE to aid the management of manual handling and other causes of musculoskeletal disorders. The MAC tool is a manual handling assessment chart that is used to assess risks by lifting, carrying and team manual handling activities; the ART tool is used to assess repetitive tasks involving the upper limb and the Push/Pull tool is used to assist making a risk assessment for activities involving pulling and pushing[11].

Figures for occupational diseases and work-related ill health generally reflect the consequences of previous workplace exposures. Over 12,000 deaths per annum are estimated to have been caused by past exposure at work, primarily to chemicals and dusts. There are 8,000 deaths from, and an estimated 14,000 new cases of, occupational cancer each year [12]. If the estimate is restricted to only established carcinogens, this is equivalent to 1 in 20 cancer deaths attributable to occupational exposure. Lung cancer contributes to the greatest number of deaths and cancer registrations, followed by mesothelioma. 2,321 people died from mesothelioma in 2009 (Table 2), compared with 153 deaths in 1968. The number of mesothelioma deaths and disablement cases continues to rise and is now predicted to peak at about 2,100 deaths in 2016[13]. Specific health and safety legislation controlling the use of asbestos has seen male deaths under the age of 55 reducing since the early 1990s. The top 10 occupational carcinogens are asbestos, silica, diesel engine exhaust, mineral oils, shift work, environmental tobacco smoke, 2,3,7,8-Tetrachlorodibenzodioxin, radon and occupation as painters or welders[12]. The construction industry has contributed most (40%) cancer deaths, the main cause being past exposures to asbestos and silica. Exposure to solar radiation and coal tar and pitch are also important.

Table 2. Deaths from pneumoconiosis, asbestosis and mesothelioma in the period 1974 − 2009

Occupational diseases	1974	2009
Deaths from pneumoconiosis	453	149
Deaths from asbestosis	25	189
Deaths from mesothelioma	243	2,321

Source HSE (http://www.hse.gov.uk/statistics/history/index.htm).

There are about 7,000 new cases of work-related respiratory disease reported to general practitioners, each year, and approximately 30,000 workers report that they currently have breathing or lung problems caused or made worse by their work. 261 cases of occupational asthma were seen by respiratory specialists or occupational physicians, in 2010, and the overall trend is a reduction in new cases over the last decade. There were approximately 4,000 deaths due to chronic obstructive pulmonary disease, attributed to past exposures to gases, dusts and fumes at work[9].

Work-related skin disease is common, although less so than 10 yr ago. Almost 40,000 cases of work-related skin disease are reported by general practitioners and there were nearly 1,500 dermatitis cases assessed by dermatologists or occupational physicians. The most common work-related skin disorder is contact dermatitis, the most common causes of which are soaps and cleaners, wet work, rubber, chemicals and materials. Florists and hairdressers have high rates of dermatitis[9].

Diseases and illnesses associated with physical workplace hazards continue to be important. Work-related musculoskeletal disorders amounted to 158,000 new cases in 2010/11 and there are 351,000 existing cases that are documented. There may be many more unreported cases. The highest rates are in manual and skilled occupations, including agriculture, construction, postal and courier jobs. The highest rates are in people older than 45 yr and the

Table 3. Rates of self-reported illness for the period 1990 − 2011

Rate of self-reported work-related illness (2010/11 data adjusted to align with 1990 survey definitions where possible)	1990	2010/11
Overall rate per 100,000 employed	5,940	3,820
Rate of Musculoskeletal disorders per 100,000 employed	2,750	1,690
Rate of stress and related conditions per 100,000 employed	820	1,330

Source HSE (http://www.hse.gov.uk/statistics/history/index.htm).

parts of the body affected are the back (40%), upper limbs (40%) and the rest (20%). Rates have fallen since 1990 (Table 3). New cases of noise-induced hearing loss occur at a rate of 20,000 per year, and each year about 200 cases are judged severe enough to qualify for industrial injury disablement benefit. The key industry sectors associated with this condition are energy and extraction, construction and manufacturing. Hand-arm vibration disorders lead to about 1,500 new claims for industrial injuries disablement benefit per year. Following changes in engineering controls the number of new cases has diminished over the past decade. Workers in foundries, construction and manufacturing have been most at risk[9].

In the United Kingdom, mental ill health is a recognised work-related illness. Self-reported occurrences are collected and monitored (Table 3). Figures for work-related stress, depression or anxiety show that there were an estimated 211,000 new cases in 2010/11. In addition, there are 189,000 pre-existing cases, making it second only to musculoskeletal disorders. Rates are higher in women than in men, higher in managerial and professional occupations and highest in workplaces employing more than 250 employees[9]. Comparison with data from 1990 shows that rates have increased considerably. However, since 2001/2 the estimated number of new cases has slowly but progressively fallen.

Workplace Health and Wellbeing

The importance of occupational health within the UK health and safety strategy has been recognised over the last decade. Securing Health Together was launched in 2000 as a 10-yr government occupational health strategy for England, Scotland and Wales[14]. The strategy aimed to

- reduce ill health both in workers and the public caused, or made worse, by work;
- help people who have been ill, whether caused by work or not, to return to work;
- improve work opportunities for people currently not in employment due to ill health or disability; and
- use the work environment to help people maintain or improve their health.

It marked an evolution in workplace health and safety aspirations in that it recognised the importance of occupational health in addressing the health of people outside the workplace and of using the work environment to promote health. It also highlighted the importance of rehabilitating people back to work and of assisting the unemployed because of illness. This lay the foundations for a subsequent cross-government strategy to improve the health and wellbeing of working age people, in 2005[15]. The background to both these occupational health strategies was reform of a welfare system in which absence from work due to sickness was estimated to cost £12 billion per year and where approximately 2.7 million people were economically inactive due to illness and in receipt of state benefits. There was also the challenge of the increasing burden of a range of non-communicable diseases in an ageing population. Occupational health is developing a new paradigm which combines classical health risk management with assessment of workability, rehabilitation back to work and promotion of health and wellbeing. The current remit of occupational health has been set in the report WORKING FOR A HEALTHIER TOMORROW[16] which is concerned with the health and wellbeing of Britain's working age population and not merely with people in employment.

The Future: Opportunities and Challenges

The UK has made good progress in controlling many safety hazards and improving occupational hygiene. Other than stress, depression or anxiety, rates of mesothelioma deaths and other cases of asbestos-related disease and hearing loss there has been a fall in numbers of a wide range of injuries and diseases or illnesses since 2000. The challenge will be to maintain these favourable trends and prepare for new and emerging diseases at a time when resources are diminishing. Partnership working between the regulator, employers and social partners will be required to make further gains. Challenges for 2012 and beyond are to create safer, healthier workplaces for all, including the low paid jobs that are often performed by migrant workers.

Attention will have to be paid to the diminishing academic base for occupational medicine and occupational health as this will be required to provide the evidence to underpin interventions and to train the next generation of specialists.

Specific projects include measuring work-related airborne asbestos exposures and determining mesothelioma risk in those without recognised asbestos exposure, developing a rigorous evidence base to inform interventions to reduce numbers of chronic obstructive pulmonary disease, investigating the long term effects of exposure to silica, assessing if standards for controlling exposures to wood dusts and isocyanates are improving and improving control measures to reduce exposures to agents or materials that cause or influence long latency diseases, such as cancer. Further work to reduce the incidence of musculoskeletal disorders and disease caused by exposure to noise or vibration will be a priority.

The need to work differently presents an opportunity to engage more fully with all the stakeholders of health and safety and to empower and enable workers to play a greater leadership role with regards to their own wellbeing at work. The HSE intends to commission social research in order to understand how to influence behaviour to encourage compliance with safety standards. There are also significant opportunities for occupational health to contribute to the health and safety agenda by improving the management and prevention of long latency diseases as well as conditions that affect workability and general wellbeing. In the UK there is an increasing recognition that being in supported employment is good for health[17] and reduces health inequalities[18].

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